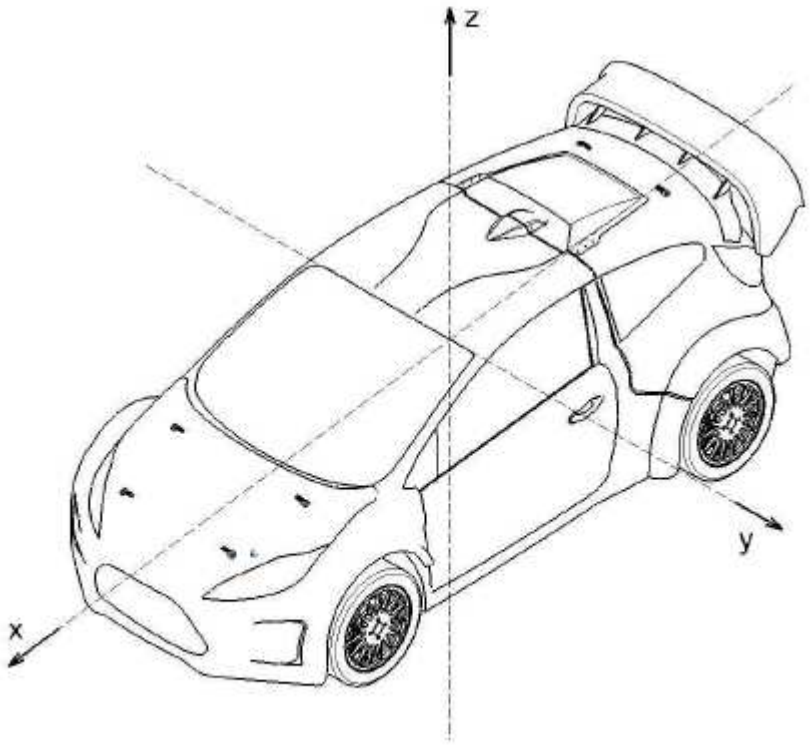
SUPER CAR LITES

2015

USER MANUAL - Rev.01

Olsbergs MSE & Avitas Motorsport



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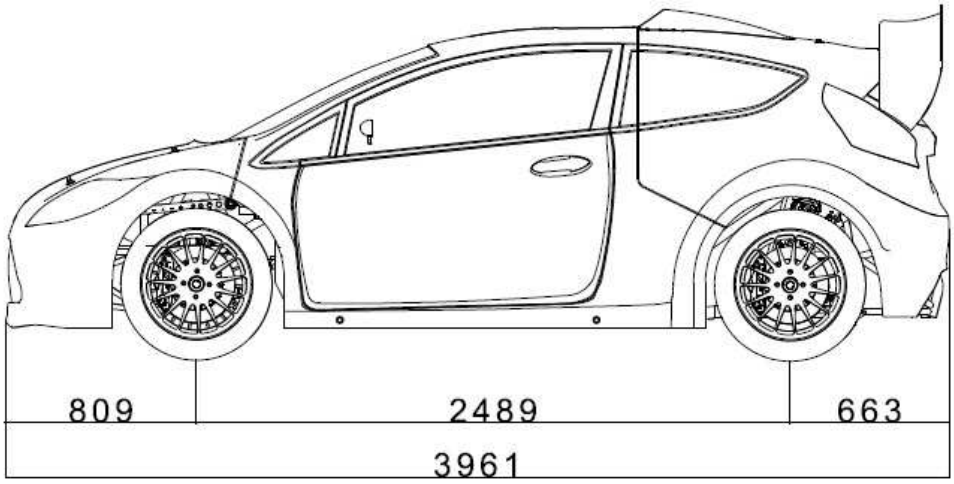
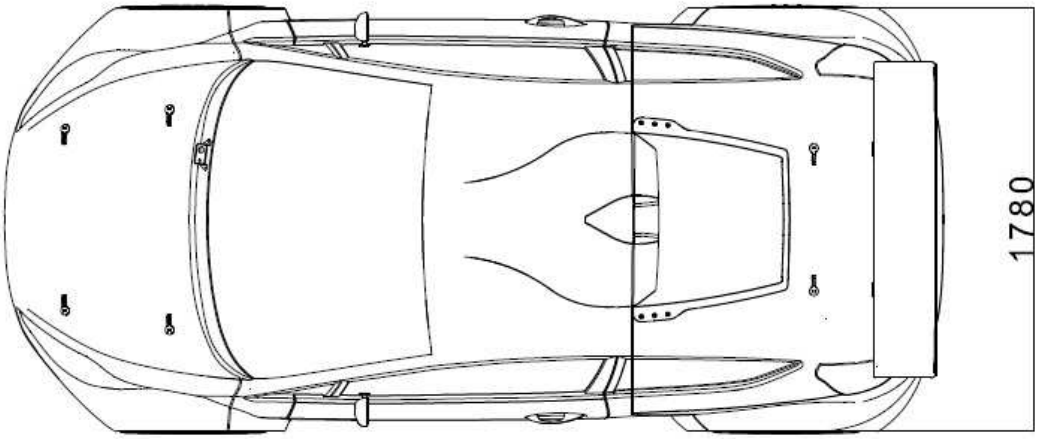
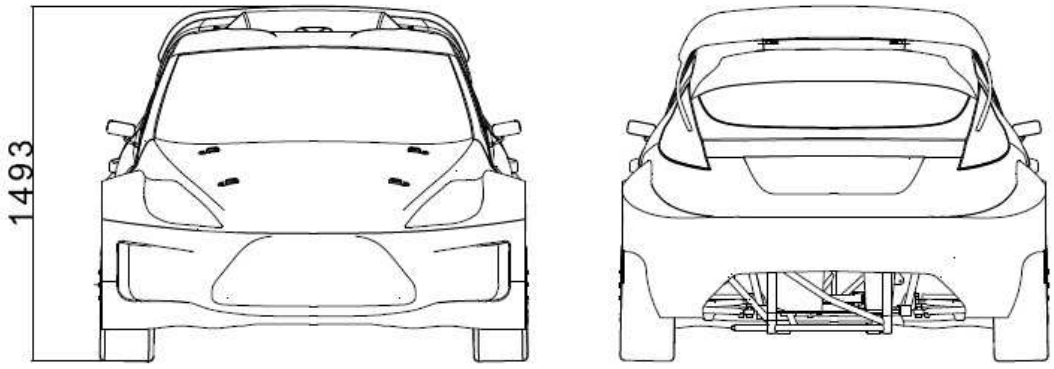
1. VIEWS OF SUPER CAR LITES







2. DIMENSIONS

Overall Length	3.961 mm
Overall Width	1.780 mm
Front Axle Centerline	1.780 mm
Rear Axle Centerline	1.780 mm
Wheelbase	2.489 mm
Front Overhang	810 mm
Rear Overhang	663 mm

3. BODY COLOR

- Bonnet Front, Body Main, Body Rear, Spoiler: VW LB9A
- Wishbones, Pushrods, Bellcranks: Galvanized Coating, Color Silver Gray
- Rear Progressive Pushrod: Cr3 Coating, Color Yellow

4. CAPACITIES

Products	Quantity	Specifications
Fuel	20 liter	98 Octane
Engine Oil	6.7 liter	10W60
Gearbox Oil	4 liter	75W140
Coolant		Distilled Water
Brake Fluid		DOT4 Brake Fluid
Clutch Fluid		DOT4 Brake Fluid
Rear Disconnect Clutch Oil	0.55 liter	75W140
Front Differential Oil	0.7 liter	75W140

5. TECHNICAL SPECIFICATIONS

Weight	1100 kg
Front Suspension	Push-Rod Independent Double Wishbone OHLINS TTX Adjustable
Rear Suspension	Push-Rod Independent Double Wishbone OHLINS TTX Adjustable
Wheels	Rims: Motegi 17"X8" PCD4X108 ET60 Tires: 215/40ZR17
Brakes	ALCON 330mm ventilated brake discs with 4 piston brake calipers.
Engine	2.400 cc - SuperCar Lites
Power	310 BHP @7800rpm
Torque	300 Nm @5500rpm
Rev Cut	@8000rpm
Oil Type	10W60

6. SETUP

Gearbox	Final Drive	1st	2nd	3rd	4th	5th	6th
SL90-20	8/31	10/38	13/36	13/28	15/27	19/29	18/24

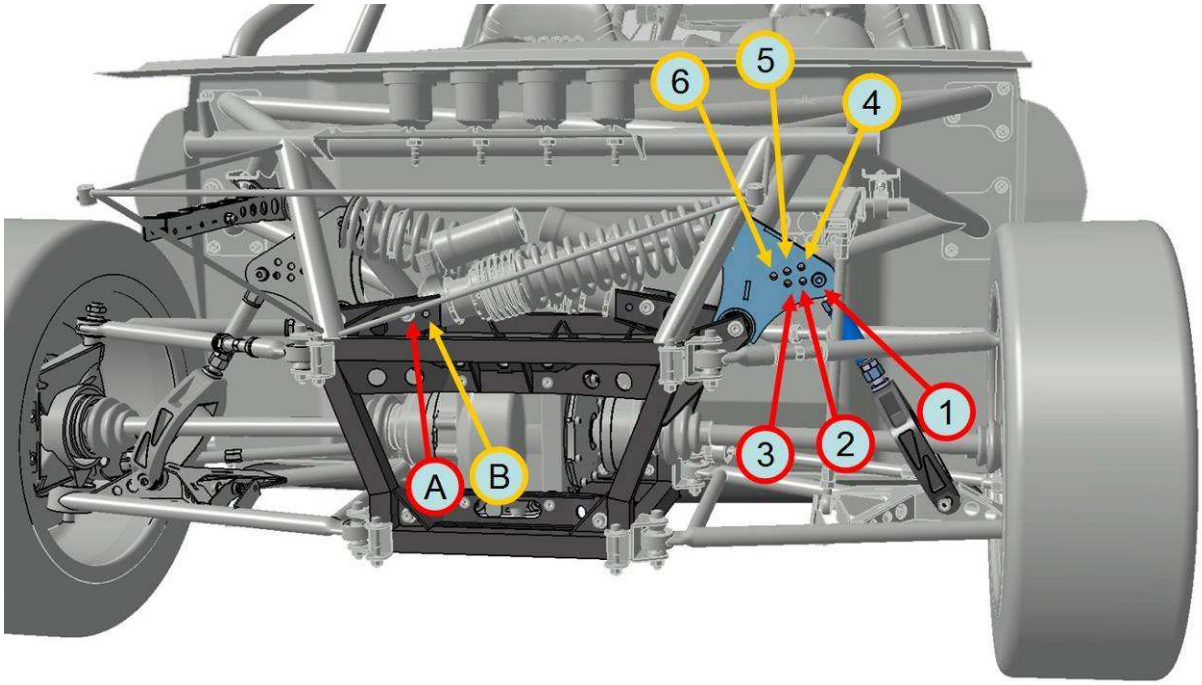
	Front	**Rear**
Spring Stiffness [N/mm]	65	70
Dampers	OHLINS TTX Adjustable	OHLINS TTX Adjustable
Anti-Roll Bar Stiffness	170Nm/deg	140Nm/deg
Geometry		
Caster [°]	7°	----
Camber [°]	-1°	-1°
Toe	0°	0°
Anti-Dive	%42,5	%43,7
Anti-Squat	%23	
Wheel Travel	240 mm	
Camber Gain	-0,0146 °/mm	
Tyres	215/40ZR17	215/40ZR17
Circumference	2042 mm	2042 mm

6.1. SETUP ADJUSTMENT

Adjustment	Front	Rear
	Camber Change	
1 turn of upper wishbone turnbuckle	0,65° (Both turnbuckles)	0,7°
	Caster Change (front)	
1 turn of front turnbuckle (contraction)	-0,85°	
1 turn of rear turnbuckle (extension)	-0,85°	
	Toe Change	
1 turn of Rodend	0,77°	0,57°

6.2. BELLCRANK SETTINGS

6.2.1. FRONT BELLCRANK SETTINGS



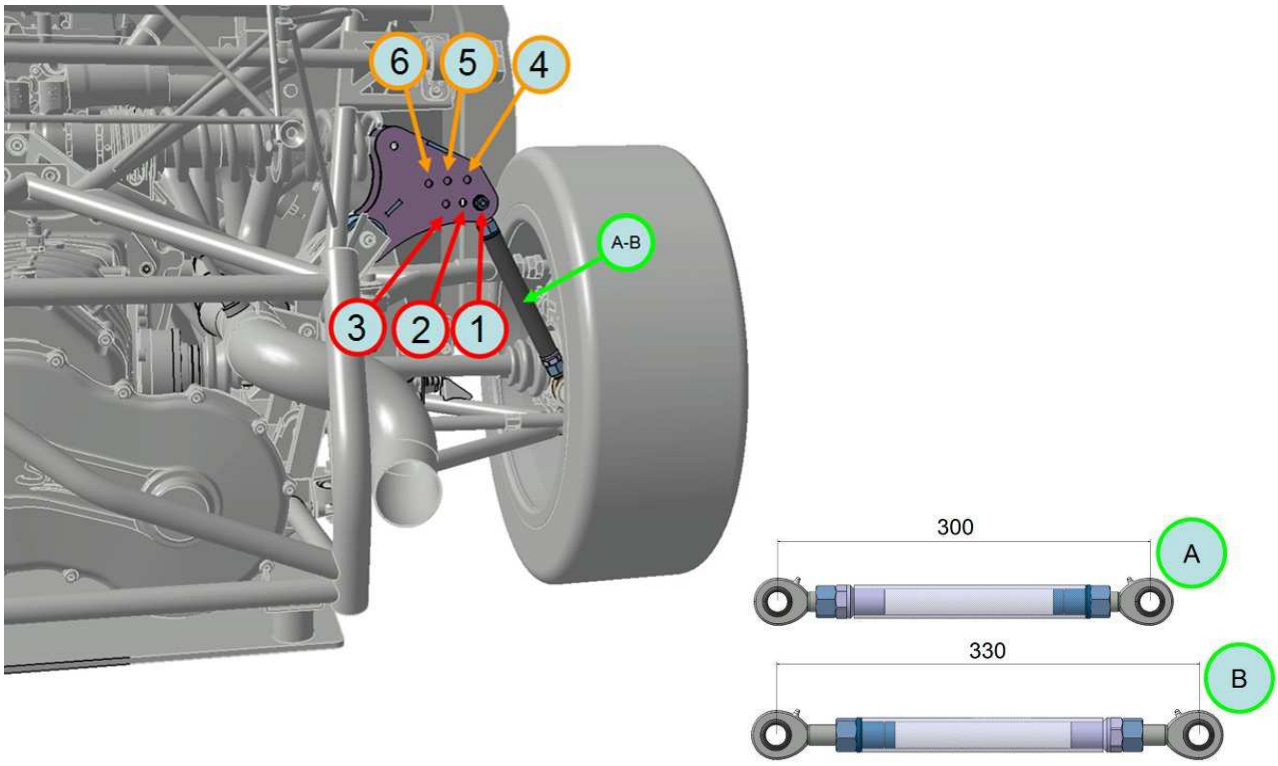
There are two operations modes for the front suspension:

- A) Suspension Mounted to Point A: Non-Progressive Motion
- B) Suspension Mounted to Point B: Progressive Motion

Both modes have three individual stiffness options providing different motion ratios, accompanied with different wheel travel values. Predifined front bellcrank positions and their effects on suspension motion ratios are:

			Motion Ratio	
Chassis Mounting Point	Bellcrank Mounting Point	Wheel Travel (mm)	Full Rebound	Full Compression
Non-Progressive Motion				
A	1	240	0,58	0,71
A	2	210	0,66	0,83
A	3	180	0,76	1,00
Progressive Motion				
B	4	240	0,52	0,83
B	5	210	0,58	1,00
B	6	180	0,66	1,25

6.2.2. REAR BELLCRANK SETTINGS



There are two operations modes for the rear suspension:

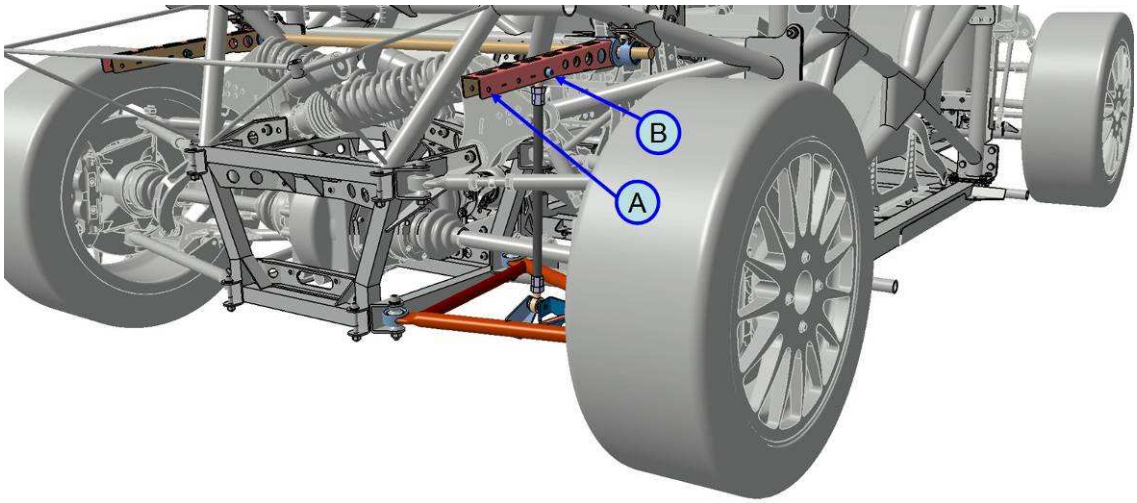
- A) Pushrod Length l=300mm: Non-Progressive Motion
  Pushrod color: Silver Gray, code AV4015
- B) Pushrod Length l=330mm: Progressive Motion
  Pushrod color: Yellow, code AV4145

Both modes have three individual stiffness options providing different motion ratios, accompanied with different wheel travel values. Predifined rear bellcrank positions and their effects on suspension motion ratios are:

			Motion Ratio	
Pushrod Length	Bellcrank Mounting Point	Wheel Travel (mm)	Full Rebound	Full Compression
Non-Progressive Motion				
A - 300mm	1	240	0,58	0,71
A - 300mm	2	210	0,66	0,83
A - 300mm	3	180	0,83	0,90
Progressive Motion				
B - 330mm	4	240	0,50	0,77
B - 330mm	5	210	0,58	0,90
B - 330mm	6	180	0,66	1,11

6.3. ANTI-ROLL BAR STIFFNESS SETTINGS

6.3.1. FRONT ANTI-ROLL BAR STIFFNESS SETTINGS



There are 2 different stiffness settings for front Anti-Roll Bar:

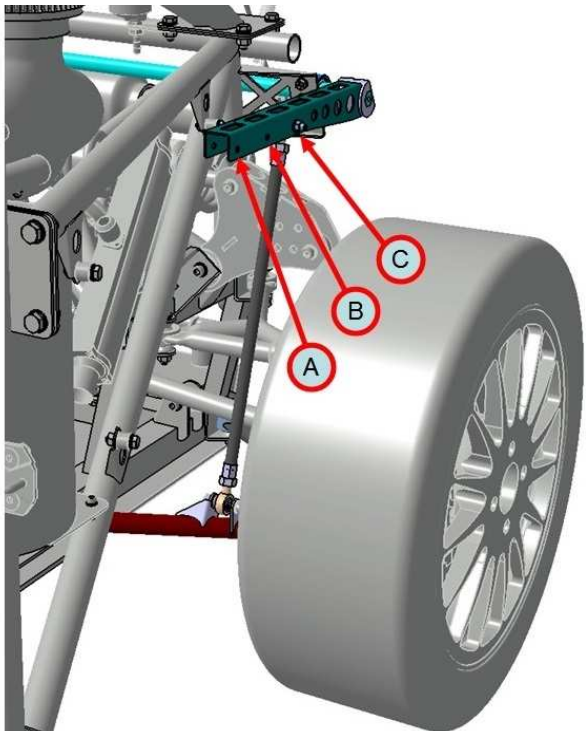
- Soft:

Both (Left&Right) Anti-Roll Bar push rods on Position A.

- Stiff:

Both (Left&Right) Anti-Roll Bar push rods on Position B.

6.3.2. REAR ANTI-ROLL BAR STIFFNESS SETTINGS



There are 3 different stiffness settings for rear Anti-Roll Bar:

- Soft:

Both (Left&Right) Anti-Roll Bar push rods on Position A.

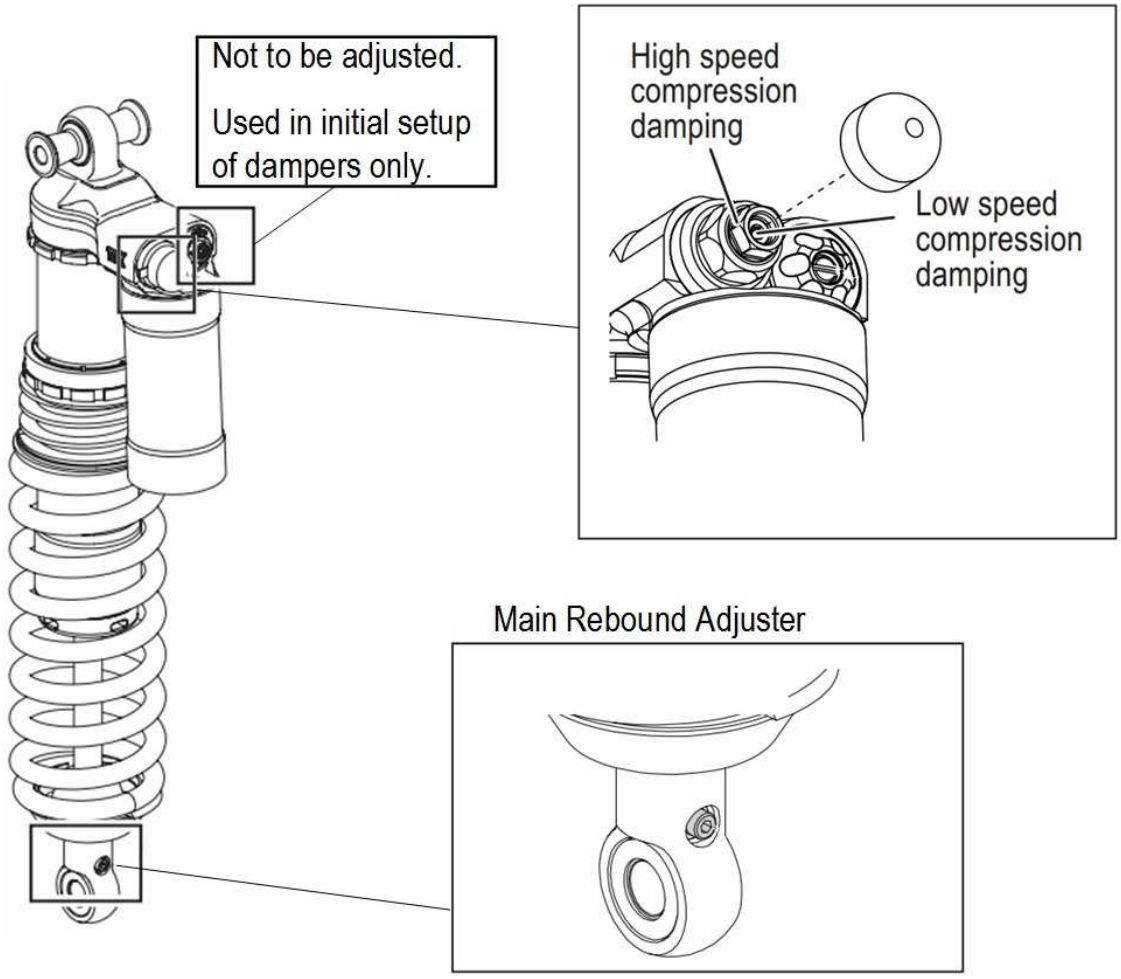
- Intermediate:

Both (Left&Right) Anti-Roll Bar push rods on Pos. B.

- Stiff:

Both (Left&Right) Anti-Roll Bar push rods on Position C.

6.4. SUSPENSION SETTINGS


Not to be adjusted.
Used in initial setup of dampers only.
High speed compression damping
Low speed compression damping
Main Rebound Adjuster

Rebound Set-Up

- Use a 3 mm allen key or tool.
- Turn the adjuster clockwise to fully closed position (position zero [0]).
- Turn counter clockwise to set the adjuster to recommended number of clicks.
- If you want to change setting, adjust in steps of 2-3 clicks at a time.
- Focus on the main adjuster. Main adjuster has 5-40 clicks range.,

Compression Set-Up

- Low speed compression is adjusted by using a 3mm allen key.
- High speed compression is adjusted with a 12 mm wrench.

We recommend you to adjust low speed compression in steps of 2-3 clicks and high speed 3-5 clicks to fine tune the set up. The low speed adjuster has approximately 40 clicks and high speed 50 clicks.

To reset compression

- Turn the adjuster clockwise to fully closed position (position zero [0]). Then, turn counter clock-wise to open, and count the clicks until you reach the recommended number of clicks. See recommended Set-up data in the Mounting Instructions for each shock absorber/strut.

CAUTION
Do not use force, delicate sealing surfaces can be damaged. Hand tighten only.

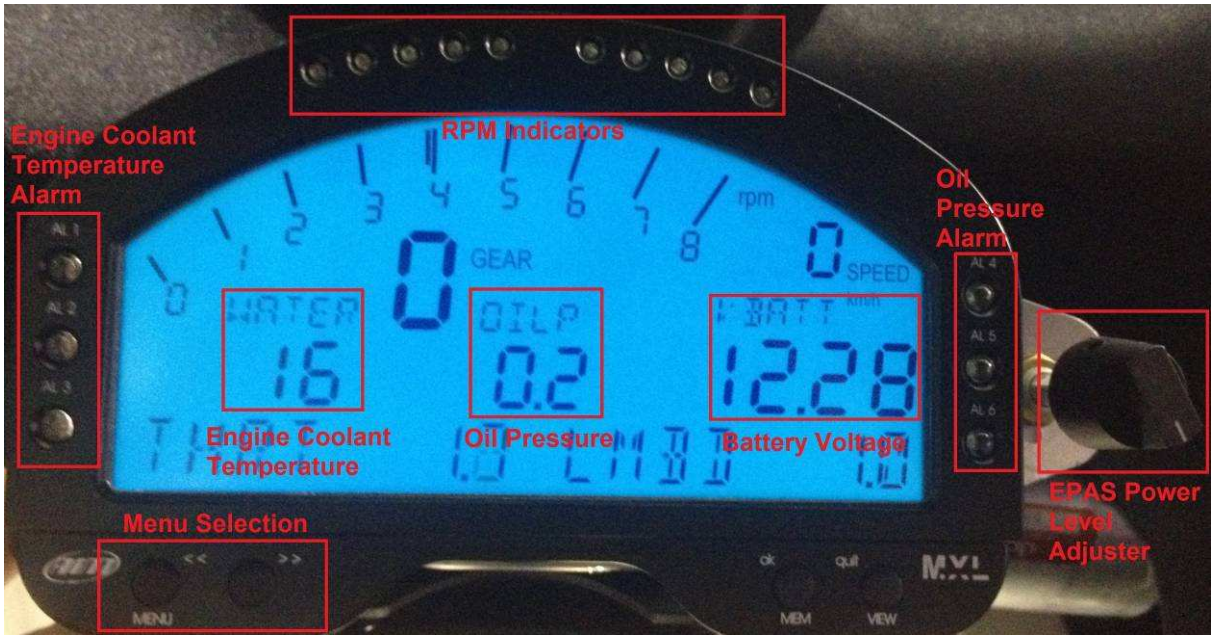
6.4.1. DEFAULT SUSPENSION SETTINGS

For Front and Rear Suspensions the default settings are as below:

	Rebound	High Speed Compression	Low Speed Compression
Front	25	20	20
Rear	25	20	20

7. DASHBOARD

7.1. DASHBOARD INDICATOR AREAS

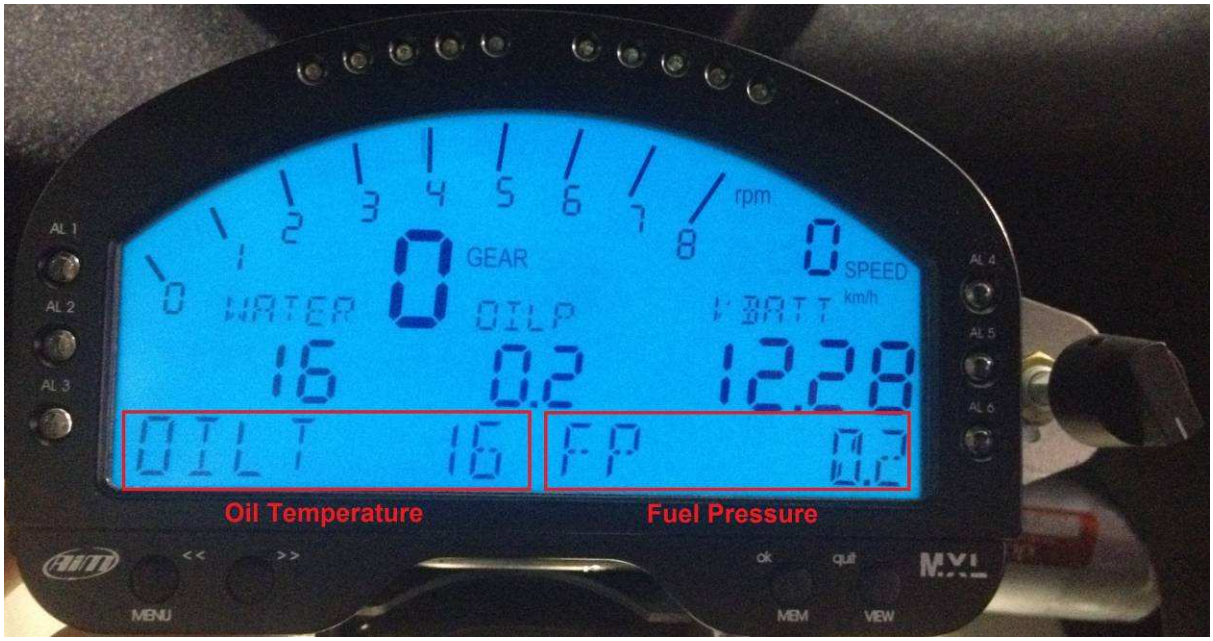


- RPM Indicator: Corresponding LEDs light up at indicated engine rpm.
- Oil Pressure: Displays the current oil pressure.
- Oil Pressure Alarm: 3 LEDs light up if pressure is below 1,5 bar.
- Battery Voltage: Displays the current battery voltage.
- Menu Selection: Switches between sensor displays.
- Engine Coolant Temperature: Displays the current coolant temperature.
- Engine Coolant Temperature Alarm: 3 LEDs light up if temperature is above 100°C.
- EPAS Power Level Adjuster: Adjusts the power level of EPAS. CW softer, CCW stiffer

7.2. DASHBOARD SENSOR OUTPUT SCREENS

Screens can be switched by using menu selection buttons.

- Throttle Position: Displays the current throttle position over 100.
- Lambda Sensor Output: Displays the current lambda sensor reading.



- Oil Temperature: Displays the current oil temperature.
- Fuel Pressure: Displays the current fuel pressure.

8. EPAS

The vehicle is equipped with an Electrical Power Assist System. The user can adjust the level of assistance with the EPAS Power Level Adjuster next to the Dashboard pictured below: CW softer, CCW stiffer

8.1. CALIBRATION OF COLUMN

It is normal for the steering wheel to move on initial power up and during calibration. Do not attempt to hold the wheel at this time or the settings may become corrupted.

- Set Power Level Adjuster fully counter clockwise.
- Switch on "Electronics +12v" until LED (next to the Power Level Adjuster) lights up. Immediately switch off and then back on until LED lights again.
- Continue to do this 3 more times until on the 4th time the LED lights and flashes, this is the calibration phase.
- The LED will extinguish at the end of calibration when you can now use the system.

Calibration only needs to be carried out once at installation as the settings will be retained even when power is removed.

If any unexpected behavior is observed with the EPAS, the owner shall contact the car manufacturer.

9. ENGINE

9.1. ENGINE OPERATING INSTRUCTIONS

The following should be carried out immediately prior to operating the engine:

- The engine should be operated with Sunoco 260GT Plus fuel. Agreement to use another other fuel should be made with Mountune prior to engine operation.
- Water level should be checked in the header tank and set to the mid position on the sight gauge. Additives such as water wetter can be used, or antifreeze where allowed (80/20 mix).
- With the ignition and fuel pumps on, the static fuel pressure should be set to 4bar by adjusting the fuel pressure regulator.
- The engine should be cranked on the starter motor, with the ignition turned off to achieve oil pressure. The cranking duration should be limited to 5 second duration. If oil pressure is not achieved after 3 cranking events, please contact Mountune before taking any other action.
- If oil pressure is successfully achieved, switch ignition on and start the engine. Allow the engine to run until water temperature reaches 85C. Check during this warm up running that the engine and its installation are free from leaks.
- Oil level should be checked following this warm up run.
- Complete installation lap (where possible). Check water temperature on track is within specified guidelines, and adjust radiator blanks as required to achieve this.

If an engine failure occurs please contact Mountune Racing before taking any action, so as to avoid the loss of any evidence which may help understand the failure.

9.2. OIL SPECIFICATION

A fully synthetic oil of viscosity range 5W50 or 10W60 should be used such as Shell Racing or Mobil 1.

9.3. ENGINE OPERATING BOUNDARIES

The following operating limits for the engine should be observed.

Engine speed

Maximum: 8000 rpm
Engine speed >9000 rpm – Advise engine is removed.

Water Temperature

Maximum temperature: 100°C
Desired operating range:70°C – 85°C
*Short excursions (less than 90 seconds) above this temperature during start line procedures will be accepted

Oil temperature

Maximum temperature: 130°C
Desired operating range:100°C – 120°C

Oil pressure

Minimum pressure < 2bar for duration of 2.5 seconds
Desired operating range: 4 - 5 bar

Fuel pressure

Minimum pressure: 3bar
Desired operating range:3.5 – 4.5bar
*If the above operating conditions are exceeded Mountune Racing will decide either to remove the engine, or to continue to use the engine with a reduced life.

Engine Management Safety Strategies

Mountune Racing utilises a number of safety strategies within the engine management system to assist in protecting the engine from operation outside of the operating conditions. These are as follows :

Engine Speed

Engine rev limit: set to 8000rpm

Engine rev cut: set to 8100 rpm

Engine oil temp rev limit: below 50C° oil temp a reduced rev limit is engaged – soft cut

Engine coolant temp rev limit: below 60C° and above 110C° water temp a reduced rev limit is engaged – soft cut

Pressure Protection

Low oil pressure – set to 3 bar, rpm>1000 a complete engine cut is applied.

Service Intervals

The following service intervals should be observed:

Oil and Filter - replace 500km

FEAD belt - replace on condition

Air filter – clean or replace on condition

Water radiator and pipe work – pressure test, replace on condition

Oil cooler and pipe work – pressure test, replace on condition

Catalyst – replace on condition

10. POWER TRAIN

10.1. GEARBOX

10.1.1. GENERAL DETAILS

The Supercar Lites SL90-20 gearbox is composed of a 6 front speed + reverse. Its weight is approximately 72 kg without cable of reverse gear.
It is equipped with a self-locking differential with friction discs and pressing plates with ramps. The reverse gear unlocking cable, the lubrication pump and its suction screen, and the gearing potentiometer are also provided.

10.1.2. RATIO CHARTS

	1st	2nd	3rd	4th	5th	6th
Primary Shaft	10	13	13	15	19	18
Secondary Shaft	38	36	28	27	29	24

Bevel Gear	8x31

	Primary	Idler	Secondary
Reverse Gear	11	23	44

10.1.3. DIFFERENTIAL

ZF type self-locking differential with triple friction discs and pressing plates with ramps acting symmetrically or not, for driving or braking condition.

driving ramp = 45°
braking ramp = 90°
Preload = 6 m.DaN

Note: A fell of preload from approximately 15% after 60 kilometers running in will be note.
Note: The cold measured preload (workshop) is approximately 15% higher than that measured hot.

10.1.4. LUBRICATION

Oil Capacity: 4 Liters

1st Drain	Drain Frequency	Viscosity
After a 50km running-in	Each Meeting	75W140

- Particular Precautions
No additives should be added to the oil. The resulting consequences are not in any circumstances covered by SADEV. When topping up the rear differential oil, do not mix any other oil with that already in the box.

- Storage and Use
Be particularly careful with any bottles which are open when used:

- Close the bottle again properly after use to prevent the introduction of water or dirt.
- Store bottles horizontally, protected from severe weather.
- Do not store bottles close to a washing station.
- Do not decant the oil into larger containers.

10.1.5. MAINTENTANCE

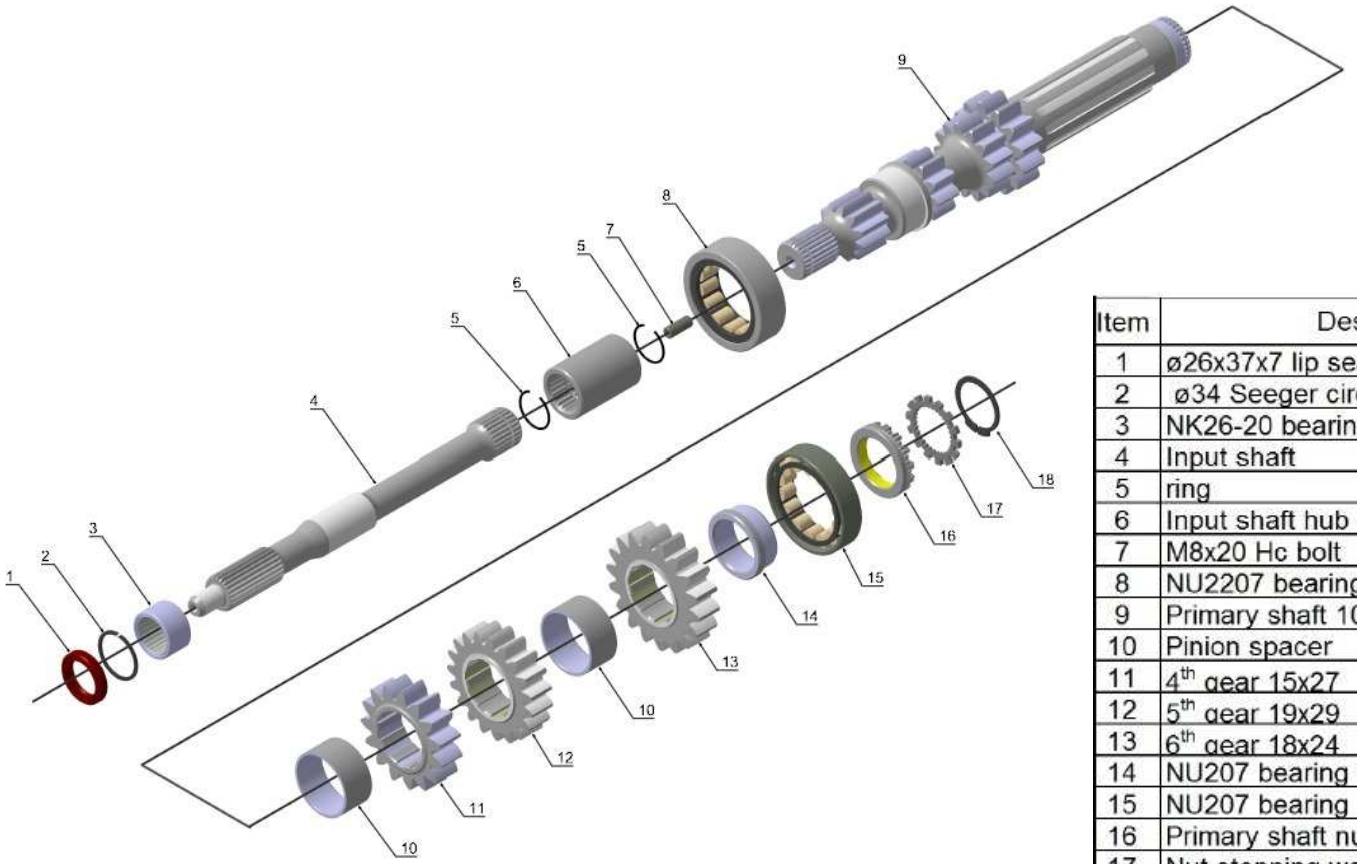
- Washing Under Pressure
When the rear differential is removed, seal all openings correctly to prevent the ingress of water into the rear differential.

- Glued components
Glue components and tightening torque are shown in the 3D exploded view.

WARNING:
Glue components have been chosen during test sessions. Only 'Loctite' brand components must be used. Sadev can't ensure consequences of false glue component choice.

10.1.6. DRAWINGS

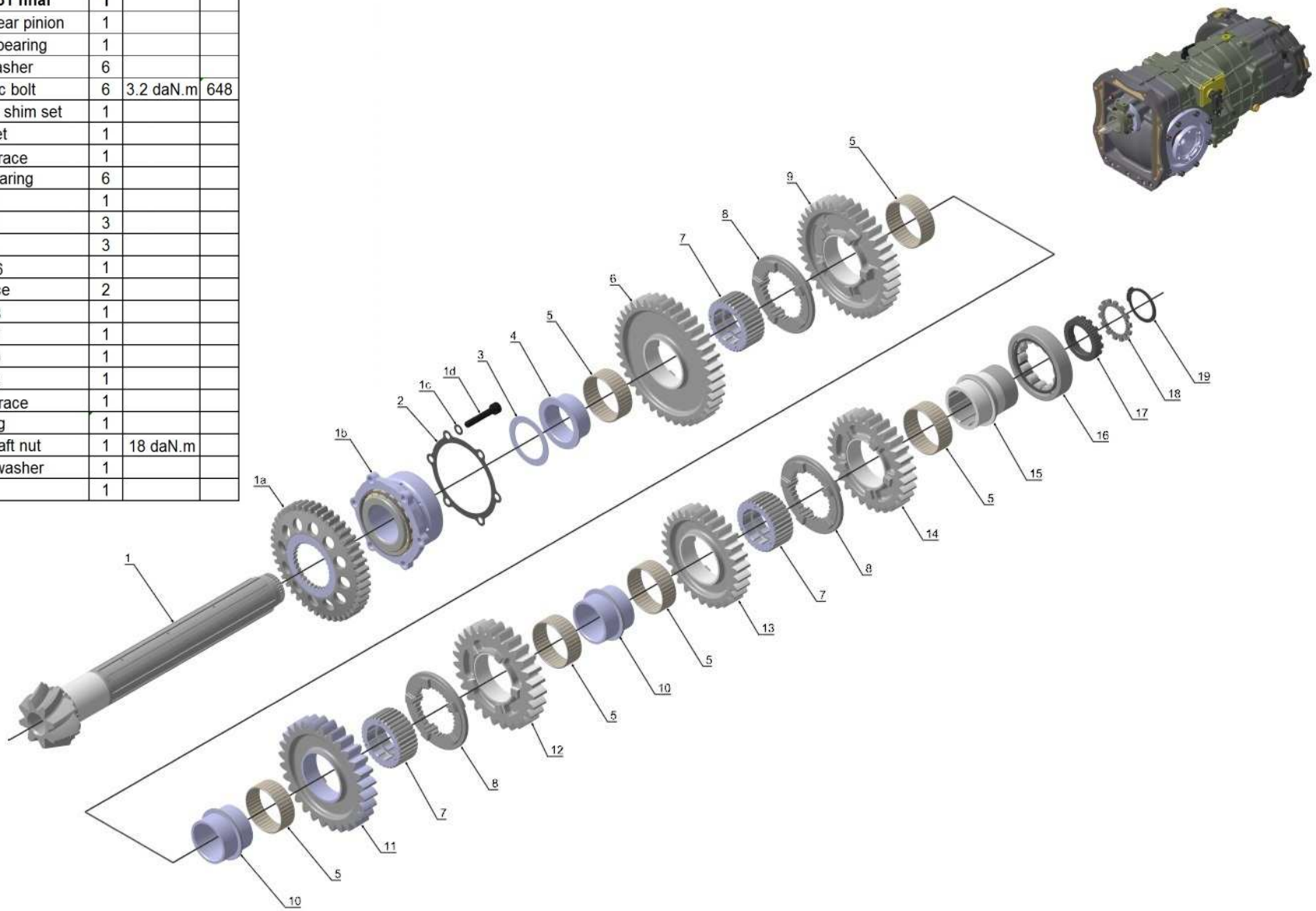
Primary Geartrain



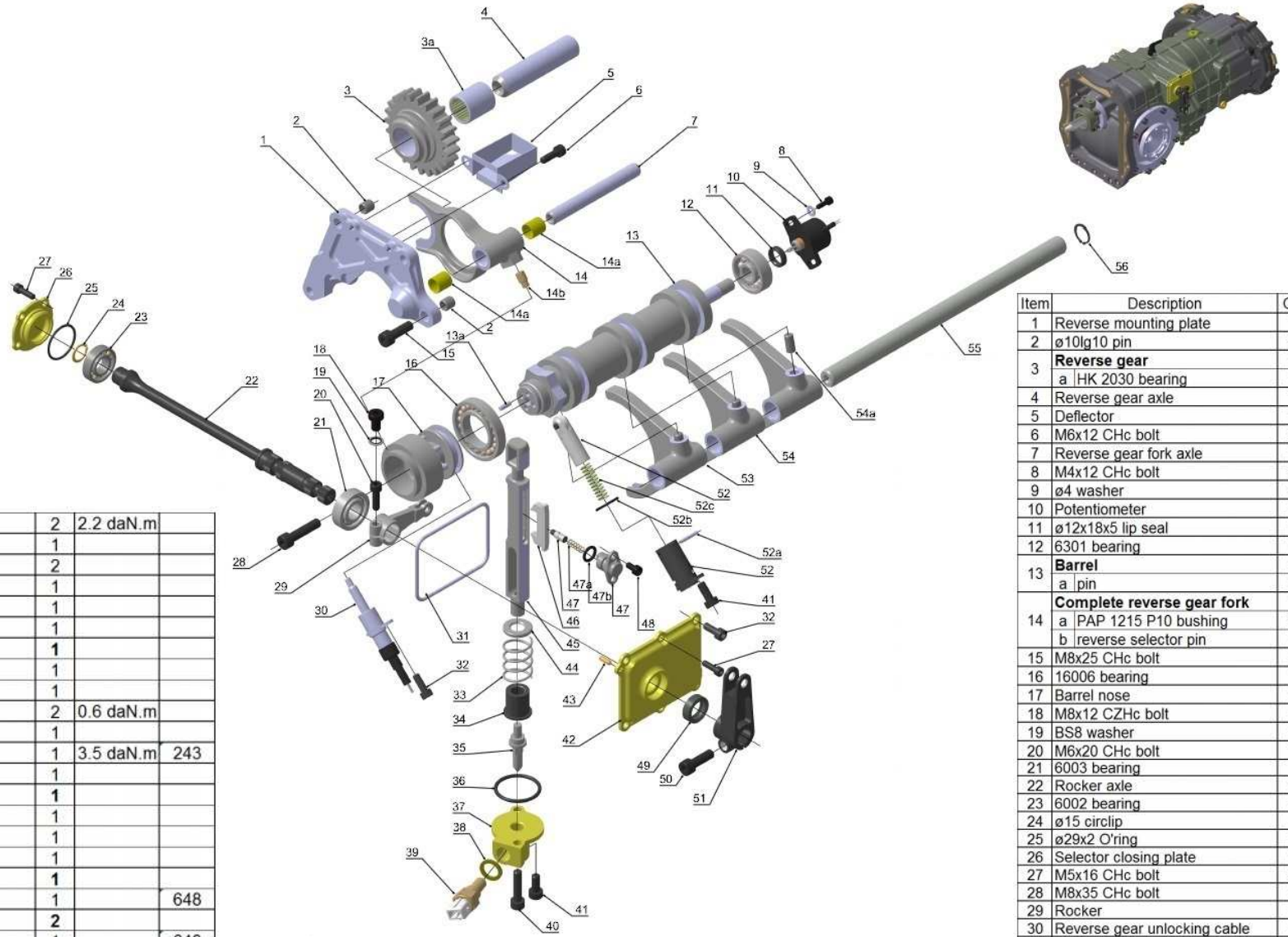
Item	Description	Qty	Torque	Glue
1	ø26x37x7 lip seal	1		
2	ø34 Seeger circlip	1		
3	NK26-20 bearing	1		
4	Input shaft	1		
5	ring	2		
6	Input shaft hub	1		
7	M8x20 Hc bolt	1		243
8	NU2207 bearing	1		
9	Primary shaft 10x38 - 13x36 - 13x28	1		
10	Pinion spacer	2		
11	4th gear 15x27	1		
12	5th gear 19x29	1		
13	6th gear 18x24	1		
14	NU207 bearing inner race	1		
15	NU207 bearing	1		
16	Primary shaft nut	1	18da.N.m	
17	Nut stopping washer	1		
18	ø35 circlip	1		

Secondary Geartrain

Item		Description	Qty	Torque	Glue
1		**Complete 8x31 final**	**1**		
	a	Reverse gear pinion	1		
	b	final drive bearing	1		
	c	SPS ø7 washer	6		
	d	M7x40 CHc bolt	6	3.2 daN.m	648
2		Gear advance shim set	1		
3		Gears shim set	1		
4		1st gear inner race	1		
5		K50x55x20 bearing	6		
6		1st gear10x38	1		
7		Dog ring hub	3		
8		Dog ring	3		
9		2nd gear 13x36	1		
10		Gear inner race	2		
11		3rd gear 13x28	1		
12		4th gear 15x27	1		
13		5th gear 19x29	1		
14		6th gear 18x24	1		
15		6th gear inner race	1		
16		NU208 bearing	1		
17		Secondary shaft nut	1	18 daN.m	
18		Nut stopping washer	1		
19		ø35 circlip	1		

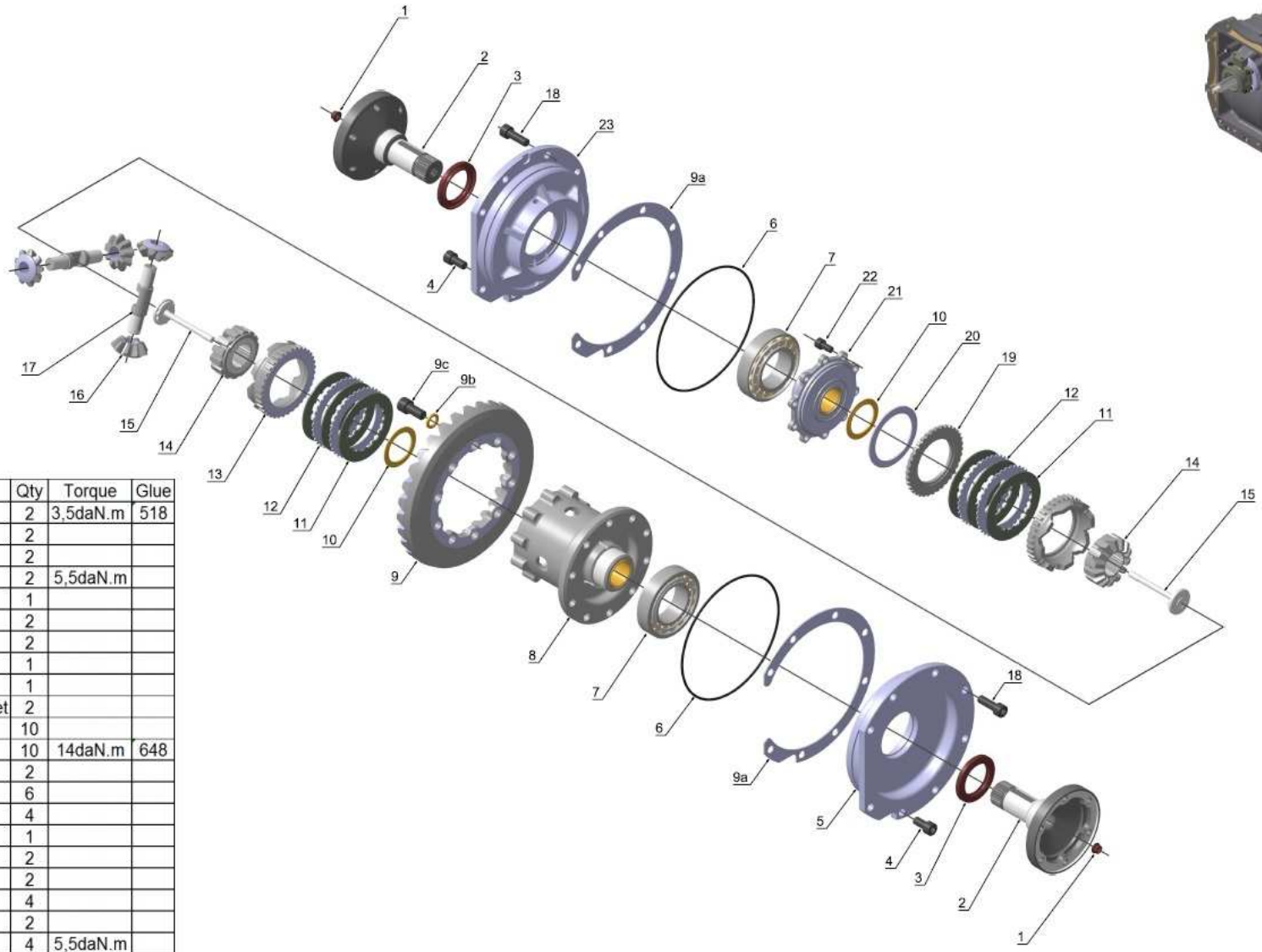


Selector



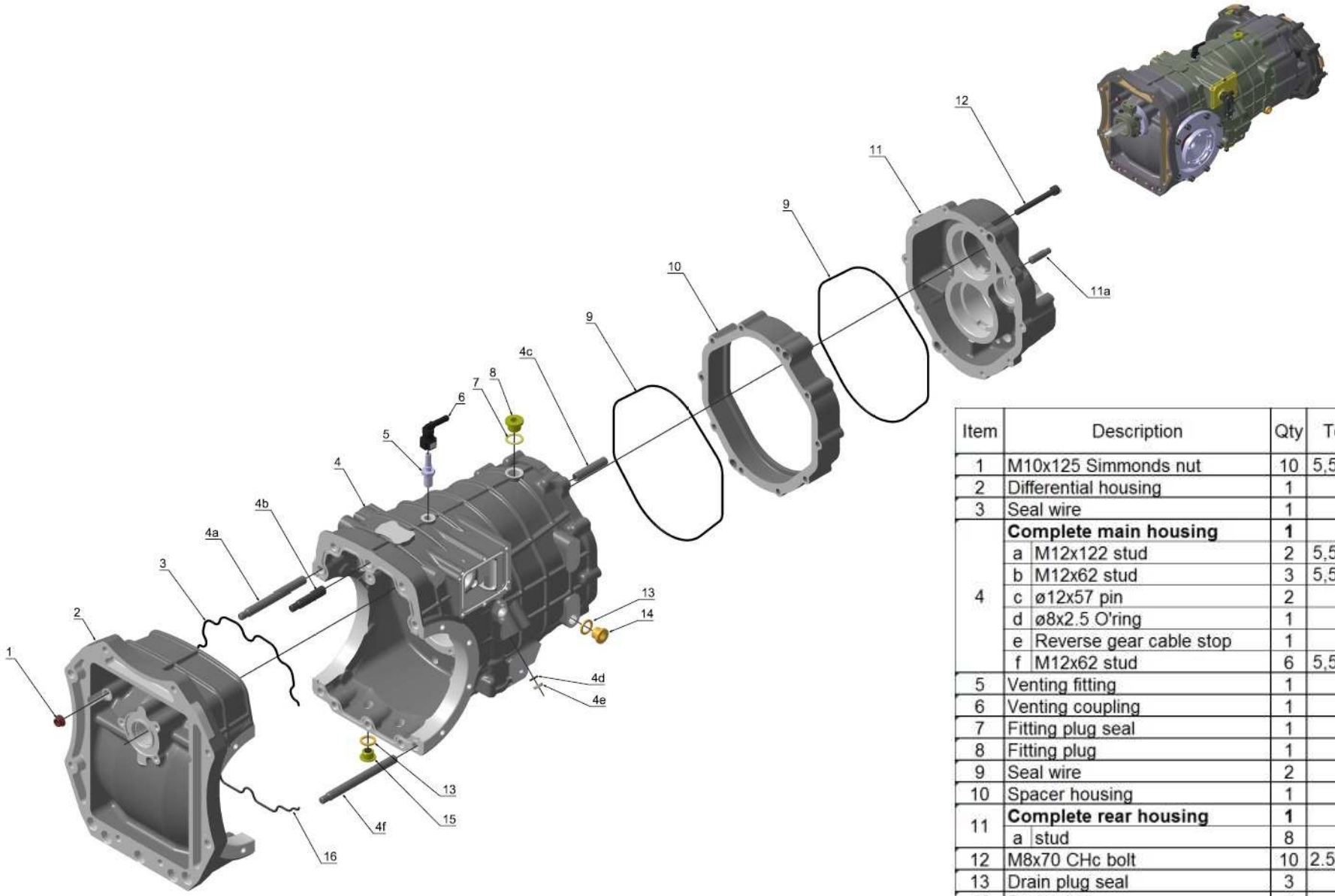
Item	Description	Qty	Torque	Glue
1	Reverse mounting plate	1		
2	ø10lg10 pin	2		
3	**Reverse gear**	**1**		
	a HK 2030 bearing	1		648
4	Reverse gear axle	1		
5	Deflector	1		
6	M6x12 CHc bolt	2	1.5 daN.m	648
7	Reverse gear fork axle	1		
8	M4x12 CHc bolt	2		
9	ø4 washer	2		
10	Potentiometer	1		
11	ø12x18x5 lip seal	1		
12	6301 bearing	1		
13	**Barrel**	**1**		
	a pin	4		648
14	**Complete reverse gear fork**	**1**		
	a PAP 1215 P10 bushing	2		648
	b reverse selector pin	1		648
15	M8x25 CHc bolt	4	2.5 daN.m	270
16	16006 bearing	1		
17	Barrel nose	1		
18	M8x12 CZHc bolt	1		577
19	BS8 washer	1		
20	M6x20 CHc bolt	1	1.8 daN.m	243
21	6003 bearing	1		
22	Rocker axle	1		
23	6002 bearing	1		
24	ø15 circlip	1		
25	ø29x2 O'ring	1		
26	Selector closing plate	1		
27	M5x16 CHc bolt	5	0.6 daN.m	
28	M8x35 CHc bolt	1	3.5 daN.m	243
29	Rocker	1		
30	Reverse gear unlocking cable	1		
31	ø86x3 O'ring	1		
32	M6x16 CHc bolt	6	1.5 daN.m	
33	Selector spring	1		
34	Selector bushing	1		
35	Selector bolt	1	2.2daN.m	243
36	ø34x3 O'ring	1		
37	Selector closing block	1		
38	Powershift shim set	1		
39	Powershift	1		577
40	M7x30 CHc bolt	1	2.2 daN.m	
41	M7x16 CHc bolt	2	2.2 daN.m	
42	Selector closing plate	1		
43	Pin	2		
44	Selector washer	1		
45	Selector axle	1		
46	Dual pin rock	1		
47	**Complete dual pin rock**	**1**		
	a Pusher spring	1		
	b ø10x2.5 O'ring	1		
48	M5x10 CHc bolt	2	0.6 daN.m	
49	ø16x24x7 lip seal	1		
50	M8x25 CHc bolt	1	3.5 daN.m	243
51	Selector rocker	1		
52	**Complete indexor**	**1**		
	a ø20x2.5 dowel pin	1		
	b ø16x2 O'ring	1		
	c Indexor spring	1		
53	**Complete fork 1-2**	**1**		
	a Selector pin	1		648
54	**Complete fork**	**2**		
	a Selector pin	1		648
55	Fork axle	1		
56	ø16 circlip	1		

Differential



Item	Description	Qty	Torque	Glue
1	M8 Simmonds nut	2	3,5daN.m	518
2	flange	2		
3	ø42x62x7 lip seal	2		
4	M10x20 CHc bolt	2	5,5daN.m	
5	Left plate	1		
6	ø162x3 O'ring	2		
7	32210 Timken bearing	2		
8	Differential case	1		
9	**Complete 8x31 final drive**	1		
	a Final drive set up shim set	2		
	b ø12 Nord Lock washer	10		
	c M12x25 CHc bolt	10	14daN.m	648
10	Differential sun gear shim	2		
11	Friction disc	6		
12	Core disc	4		
13	Differential set plate	1		
14	Differential sun gear	2		
15	Flange stud	2		
16	Planet gear	4		
17	Planet gear axle	2		
18	Machined M10x30 CHc bolt	4	5,5daN.m	
	M10x30 CHc bolt	10	5,5daN.m	
19	Pressure plate	1		
20	Belleville washer	1		
21	Differential cap	1		
22	M8x16 CHc bolt	10	3,5daN.m	648
23	Right plate	1		

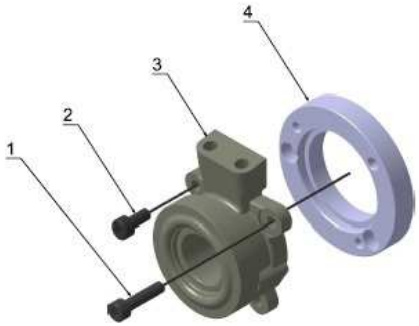
Rear Housing



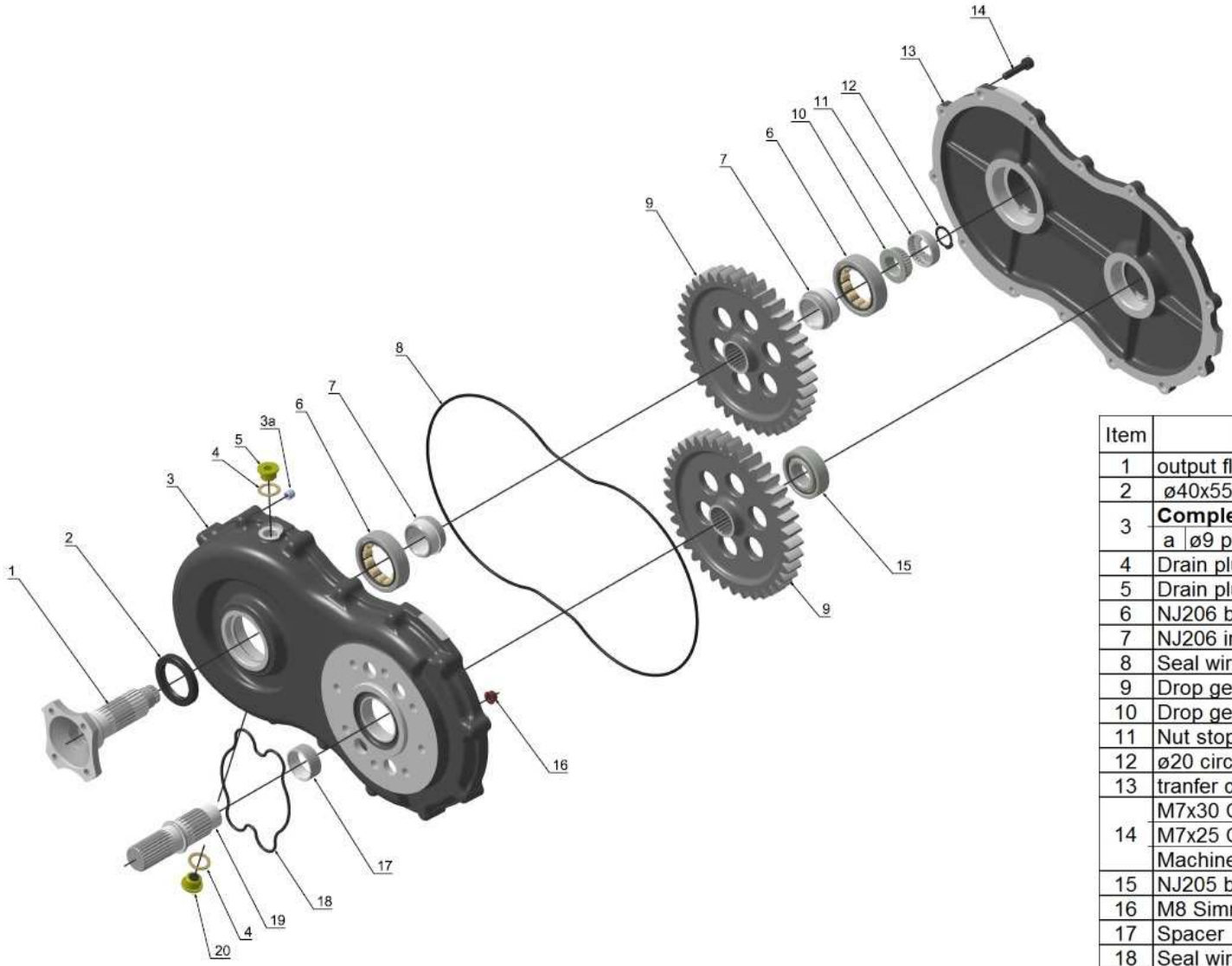
Item		Description	Qty	Torque	Glue
1		M10x125 Simmonds nut	10	5,5daN.m	243
2		Differential housing	1		
3		Seal wire	1		
4		**Complete main housing**	**1**		
	a	M12x122 stud	2	5,5daN.m	648
	b	M12x62 stud	3	5,5daN.m	648
	c	ø12x57 pin	2		648
	d	ø8x2.5 O'ring	1		
	e	Reverse gear cable stop	1		
	f	M12x62 stud	6	5,5daN.m	648
5		Venting fitting	1		577
6		Venting coupling	1		
7		Fitting plug seal	1		
8		Fitting plug	1		
9		Seal wire	2		
10		Spacer housing	1		
11		**Complete rear housing**	**1**		
	a	stud	8		648
12		M8x70 CHc bolt	10	2.5 daN.m	
13		Drain plug seal	3		
14		Drain plug	1		
15		Drain plug	1		
16		Seal wire	1		

Clutch Accessories

Item	Description	Qty	Torque	Glue
1	M7x30 CHc bolt	1	2,5daN.m	
2	M7x16 CHc bolt	4	2,5daN.m	
3	CP3859-1250 slave cylinder	1		
4	spacer	1		

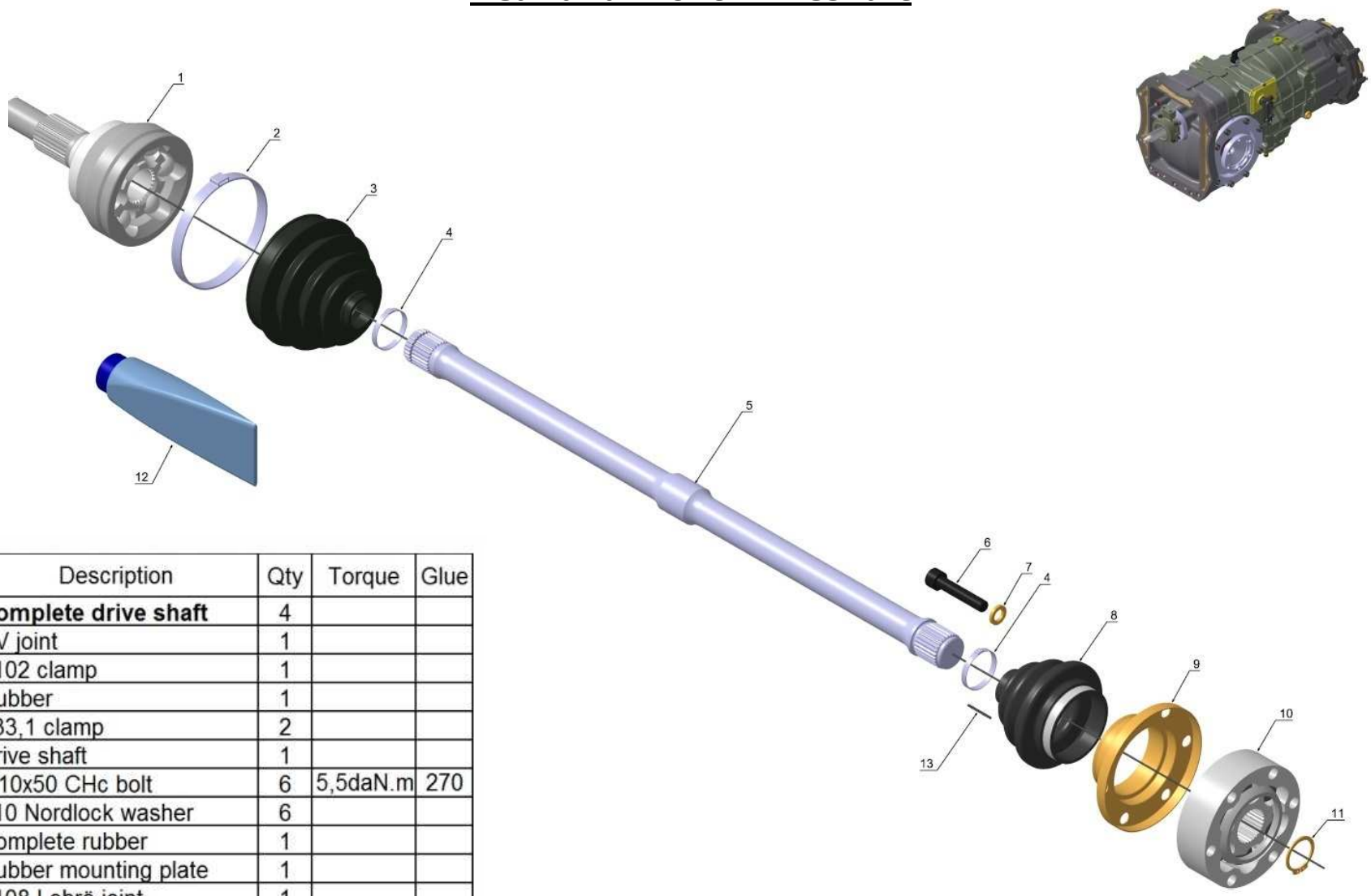


Rear Drop Gear



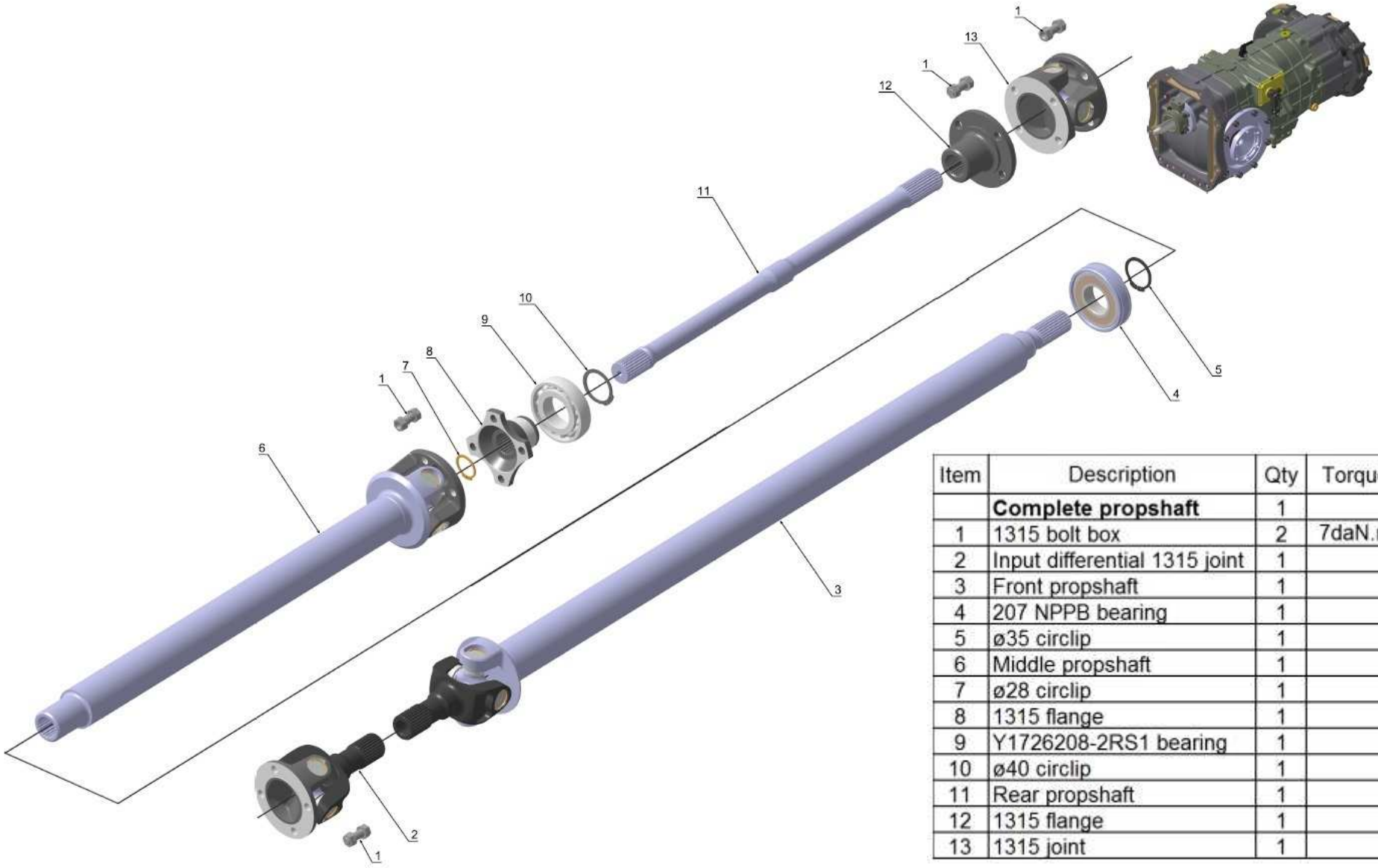
Item	Description	Qty	Torque	Glue
1	output flange	1		
2	ø40x55x8 lip seal	1		
3	**Complete transfer**	1		
	a ø9 pin	2		
4	Drain plug seal	2		
5	Drain plug	1		
6	NJ206 bearing	2		
7	NJ206 inner race	2		
8	Seal wire	1		
9	Drop gear	2		
10	Drop gear nut	1		
11	Nut stopping bushing	1		
12	ø20 circlip	1		
13	tranfer cap housing	1		
14	M7x30 CHc bolt	2	2,2daN.m	
	M7x25 CHc bolt	10	2,2daN.m	
	Machined M7x25 CHc bolt	2	2,2daN.m	
15	NJ205 bearing	1		
16	M8 Simmonds nut	8	3,5daN.m	648
17	Spacer	1		
18	Seal wire	1		
19	Drop gear input shaft	1		
20	Drain plug	1		

Rear and Front Driveshaft



Item	Description	Qty	Torque	Glue
	Complete drive shaft	4		
1	CV joint	1		
2	ø102 clamp	1		
3	Rubber	1		
4	ø33,1 clamp	2		
5	Drive shaft	1		
6	M10x50 CHc bolt	6	5,5daN.m	270
7	ø10 Nordlock washer	6		
8	Complete rubber	1		
9	Rubber mounting plate	1		
10	ø108 Lobrö joint	1		
11	ø28 circlip	1		
12	Grease	1,25		
13	ø2x26 dowel pin	1		

Propshaft



Item	Description	Qty	Torque	Glue
	Complete propshaft	1		
1	1315 bolt box	2	7daN.m	
2	Input differential 1315 joint	1		
3	Front propshaft	1		
4	207 NPPB bearing	1		
5	ø35 circlip	1		
6	Middle propshaft	1		
7	ø28 circlip	1		
8	1315 flange	1		
9	Y1726208-2RS1 bearing	1		
10	ø40 circlip	1		
11	Rear propshaft	1		
12	1315 flange	1		
13	1315 joint	1		

10.2. FRONT DIFFERENTIAL

10.2.1. GENERAL DETAILS

The front differential is equipped with a self-locking differential with friction discs and pressing plates with ramps. Its weight is approximately 27 kg.

10.2.2. RATIO CHART

Ratio of bevel gear is 8x31.

10.2.3. DIFFERENTIAL

ZF type self-locking differential with triple friction discs and pressing plates with ramps acting symmetrically or not, for driving or braking condition.

Driving Ramp =	37,5°
Braking Ramp =	90°
Preload =	7m.DaN

Note: A fell of preload from approximately 15% after 60 kilometers running in will be note.

Note: The cold measured preload (workshop) is approximately 15% higher than that measured hot.

10.2.4. LUBRICATION

Oil Capacity: 0,7 Liter

1st Drain	Drain Frequency	Viscosity
After a 50km running-in	Each Meeting	75W140

- Particular Precautions
No additives should be added to the oil. The resulting consequences are not covered by SADEV. When topping up the front differential oil, do not mix any other oil with that already in the box.
- Storage and Use
Be particularly careful with any bottles which are open when used:

- Close the bottle again properly after use to prevent the introduction of water or dirt.
- Store bottles horizontally, protected from severe weather.
- Do not store bottles close to a washing station.
- Do not decant the oil into larger containers.

10.2.5. MAINTENANCE

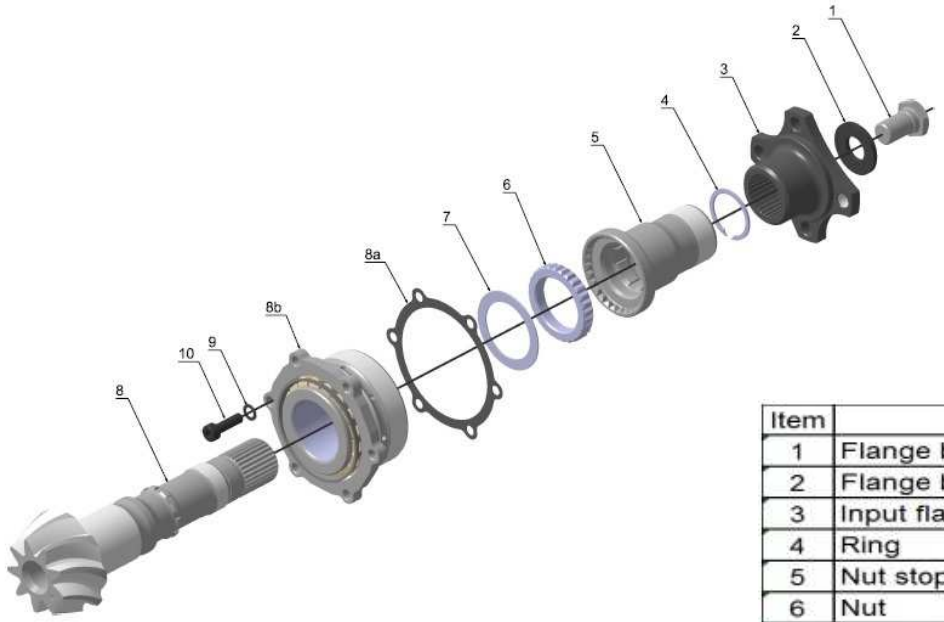
- Washing Under Pressure
When the front differential is removed, seal all openings correctly to prevent the ingress of water into the front differential.

- Glued Components
Glue components and tightening torque are shown in the 3D exploded view.

WARNING:
Glue components have been chosen during test sessions. Only 'Loctite' brand components must be used. Sadev can't ensure consequences of false glue component choice.

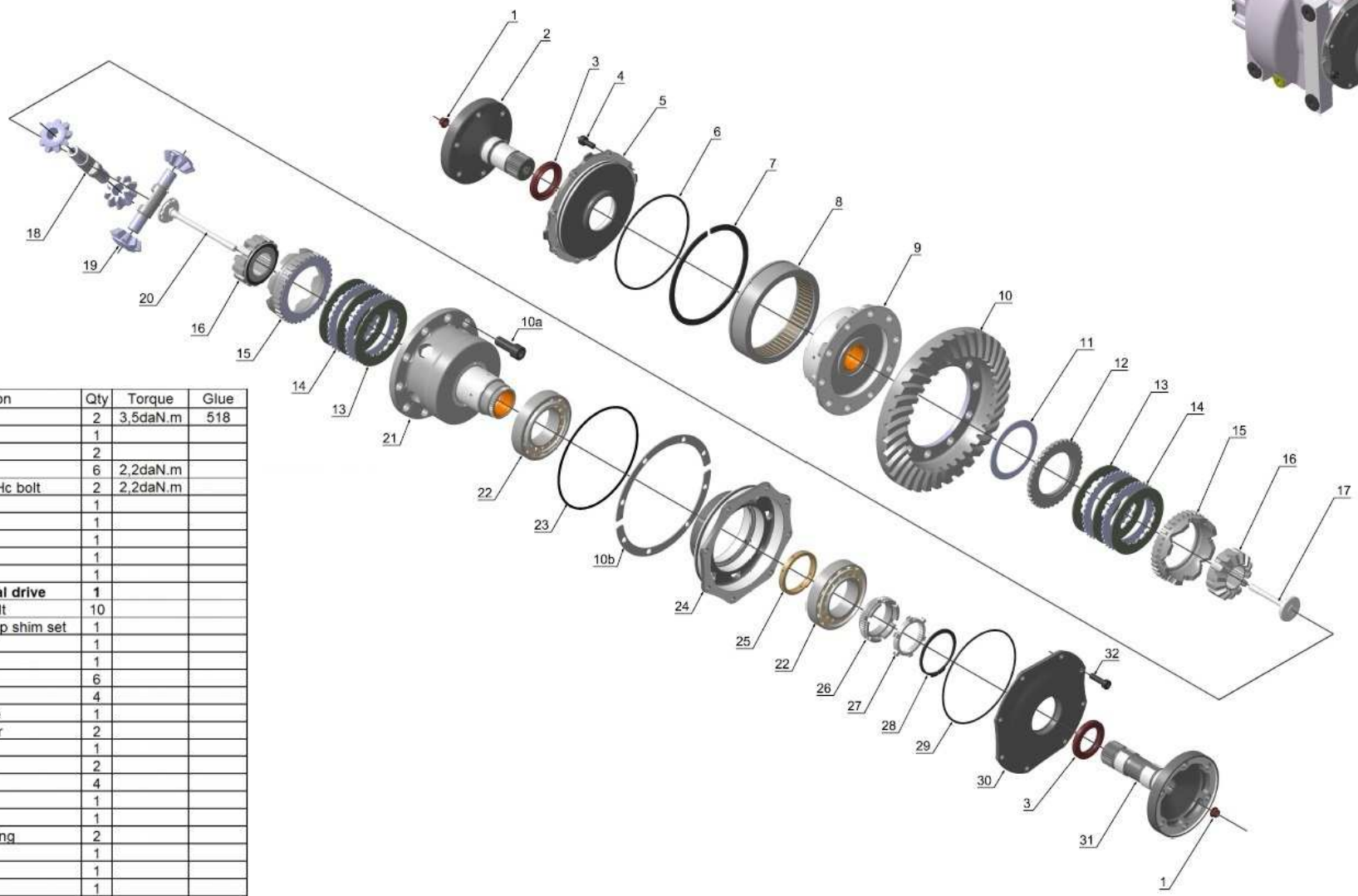
10.2.6. DRAWINGS

Front Input Shaft



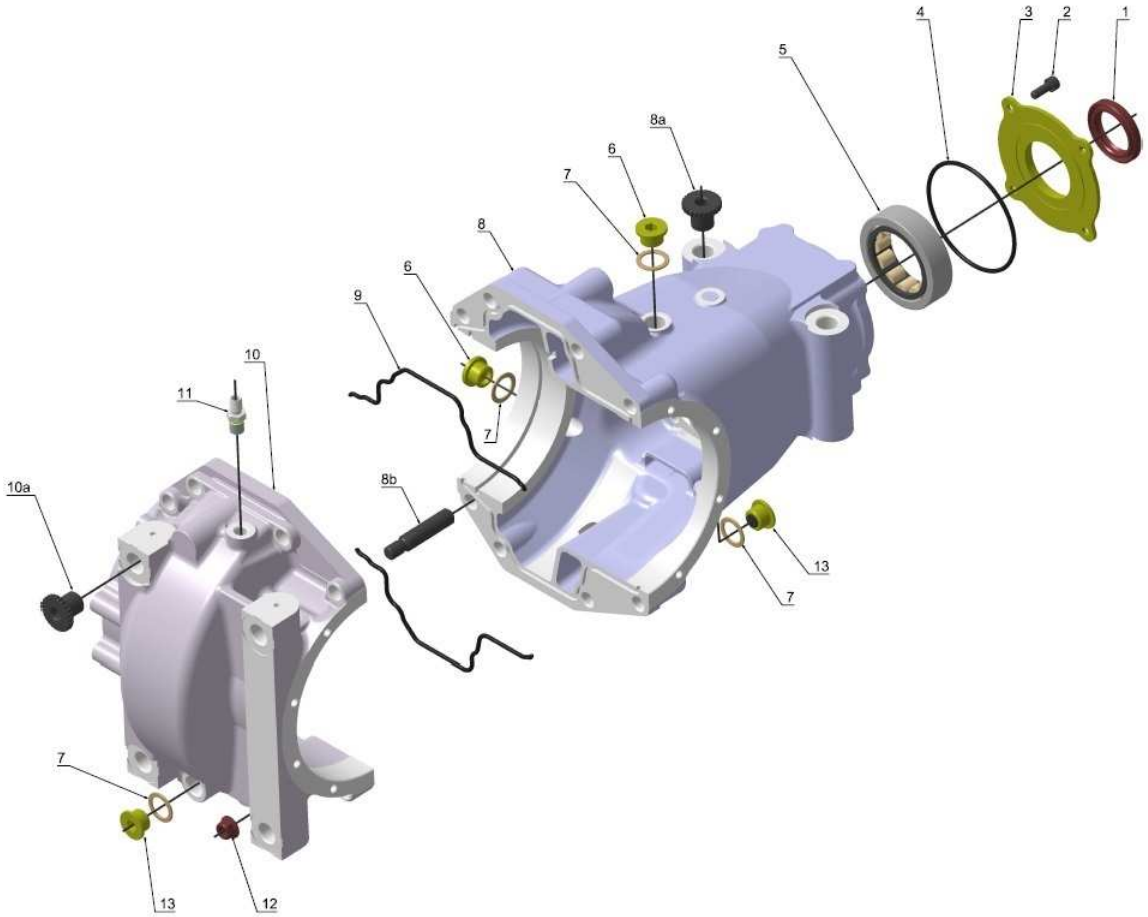
Item	Description	Qty	Torque	Glue
1	Flange bolt	1	12.5daN.m	270
2	Flange bolt washer	1		
3	Input flange	1		
4	Ring	1		
5	Nut stopping	1		
6	Nut	1	16daN.m	cuppered grease
7	Gear shim set	1		
8	**Complete 8x31 final drive**	**1**		
	a Gear advance shim set	1		
	b Final drive bearing	1		
9	ø7SPS washer	6		
10	M7x25 CHc bolt	6	2.5daN.m	648

Front Differential



Item	Description	Qty	Torque	Glue
1	M8 Simmonds nut	2	3,5daN.m	518
2	Short flange	1		
3	ø35x52x7 lip seal	2		
4	M7x16 CHc bolt	6	2,2daN.m	
	Machined M7x16 CHc bolt	2	2,2daN.m	
5	Right plate	1		
6	ø125x3 O'ring	1		
7	ø130 circlip	1		
8	NK110-30 bearing	1		
9	Differential cap	1		
10	**Complete 8x31 final drive**	**1**		
	a M12x30 CHc bolt	10		
	b Final drive set up shim set	1		
11	Belleville washer	1		
12	Pressure plate	1		
13	Friction disc	6		
14	Core disc	4		
15	Differential set plate	1		
16	Differential sun gear	2		
17	Short flange stud	1		
18	Planet gear axle	2		
19	Planet gear	4		
20	Long flange stud	1		
21	Differential case	1		
22	30210 Timken bearing	2		
23	ø136x3 O'ring	1		
24	Bearings support	1		
25	Preload shim set	1		
26	Differential nut	1	16daN.m	
27	Nut stopping washer	1		
28	ø57 circlip	1		
29	ø125x2,5 O'ring	1		
30	Left plate	1		
31	Long flange	1		
32	M7x25 CHc bolt	6	2,2daN.m	243
	Machined M7x25 CHc bolt	2	2,2daN.m	243

Front Housing



Item	Description	Qty	Torque	Glue
1	M8 Simmonds nut	2	3,5daN.m	518
2	Short flange	1		
3	ø35x52x7 lip seal	2		
4	M7x16 CHc bolt	6	2,2daN.m	
	Machined M7x16 CHc bolt	2	2,2daN.m	
5	Right plate	1		
6	ø125x3 O'ring	1		
7	ø130 circlip	1		
8	NK110-30 bearing	1		
9	Differential cap	1		
10	**Complete 8x31 final drive**	**1**		
	a M12x30 CHc bolt	10		
	b Final drive set up shim set	1		
11	Belleville washer	1		
12	Pressure plate	1		
13	Friction disc	6		
14	Core disc	4		
15	Differential set plate	1		
16	Differential sun gear	2		
17	Short flange stud	1		
18	Planet gear axle	2		
19	Planet gear	4		
20	Long flange stud	1		
21	Differential case	1		
22	30210 Timken bearing	2		
23	ø136x3 O'ring	1		
24	Bearings support	1		
25	Preload shim set	1		
26	Differential nut	1	16daN.m	
27	Nut stopping washer	1		
28	ø57 circlip	1		
29	ø125x2,5 O'ring	1		
30	Left plate	1		
31	Long flange	1		
32	M7x25 CHc bolt	6	2,2daN.m	243
	Machined M7x25 CHc bolt	2	2,2daN.m	243

10.3. REAR DISCONECT CLUTCH

10.3.1. GENERAL DETAILS

The rear disconnect clutch is to disconnect the rear differential when you use the hand break. The weight is 7.5Kg.

10.3.2. TECHNICAL DETAILS

The rear disconnect is adjusted from Sadev on a hydraulic test bench.
The minimum pressure to disconnect the rear differential is 35 bars.
The Sadev handbrake is adjusted and tested on a bench. See the drawing to know the connectors. For this system the oil is dot4 or dextron.

WARNING
Be careful when you purge the system. If you don't make it correctly the system will not disconnect the rear differential when you will pull the handbrake.

10.3.3. LUBRICATION

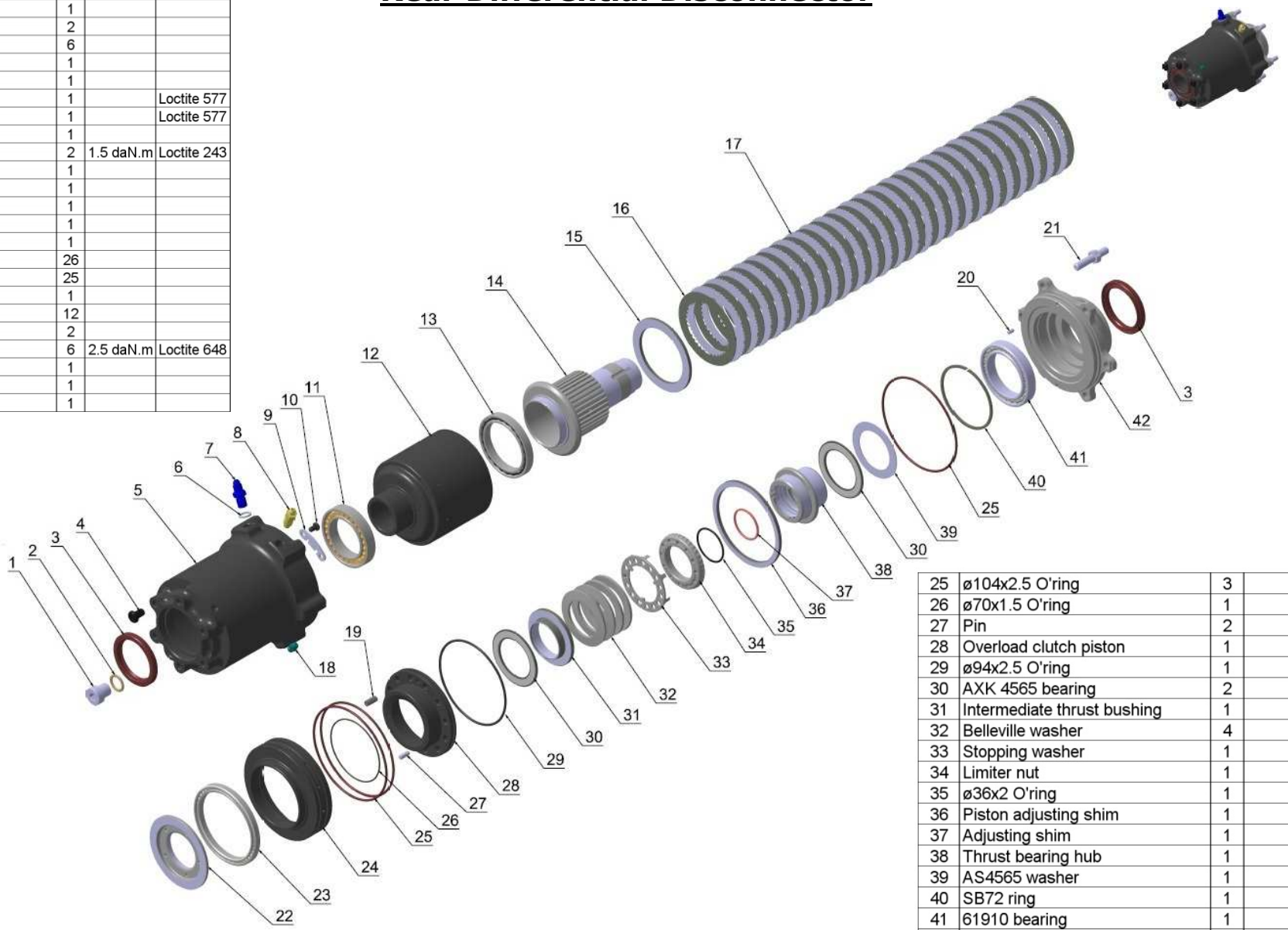
Oil Capacity: 0.55 Liters

The disconnect is delivery from SADEV with oil inside.
Oil Viscosity: 75W140

10.3.4. DRAWINGS

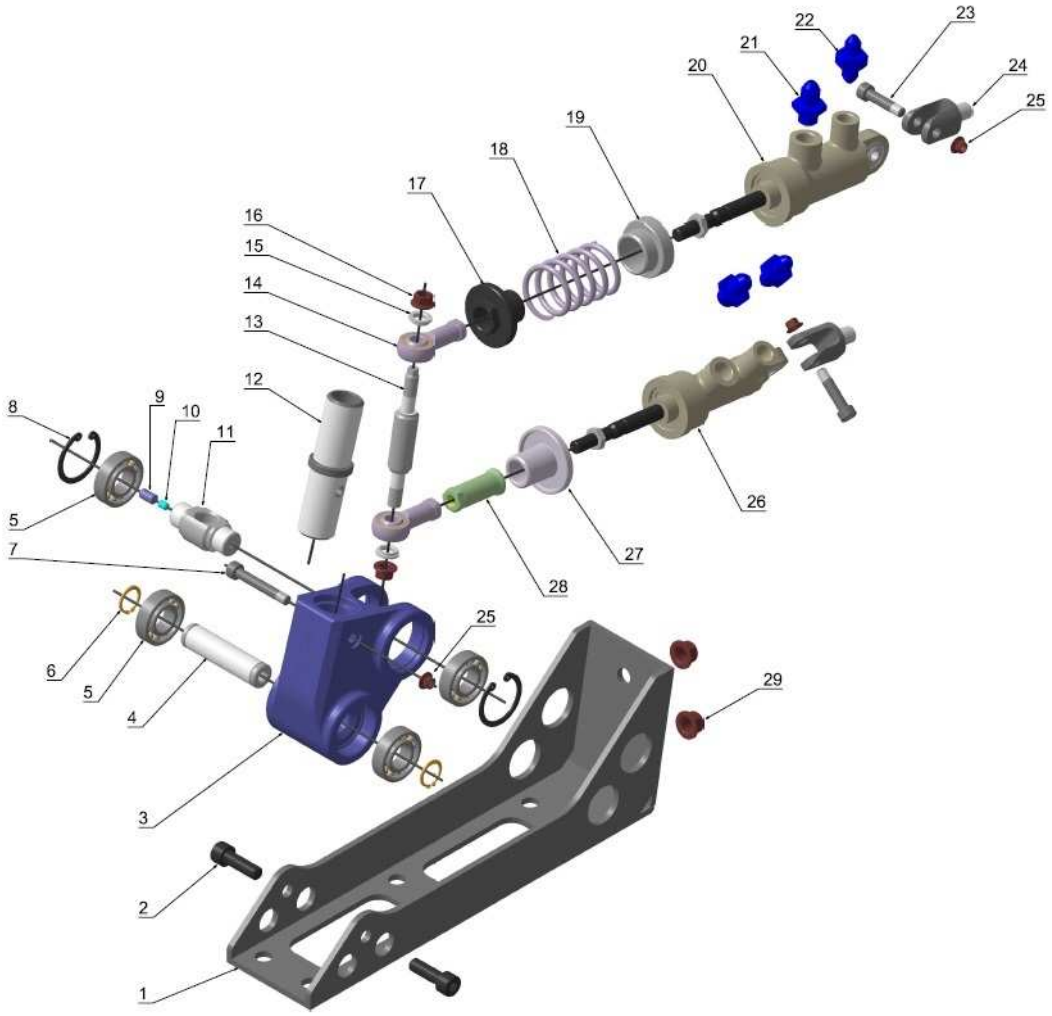
Rear Differential Disconnector

Item	Description	Qty	Torque	Glue
1	Drain plug	1		
2	Drain plug seal	1		
3	ø45x60x7 lip seal	2		
4	M8x16 BHc bolt	6		
5	Main housing	1		
6	Aluminium washer	1		
7	Dash03 fitting	1		Loctite 577
8	M10 bleeding bolt	1		Loctite 577
9	Deflector	1		
10	M5x8 BHC bolt	2	1.5 daN.m	Loctite 243
11	61909 bearing	1		
12	Overload clutch case	1		
13	61811 bearing	1		
14	Output hub	1		
15	Preload washer	1		
16	Friction disc	26		
17	Core disc	25		
18	Venting fitting	1		
19	Spring	12		
20	ø4 lg7 pin	2		
21	Stud	6	2.5 daN.m	Loctite 648
22	Thrust bushing	1		
23	KB 030 ARO bearing	1		
24	Cylinder chamber	1		



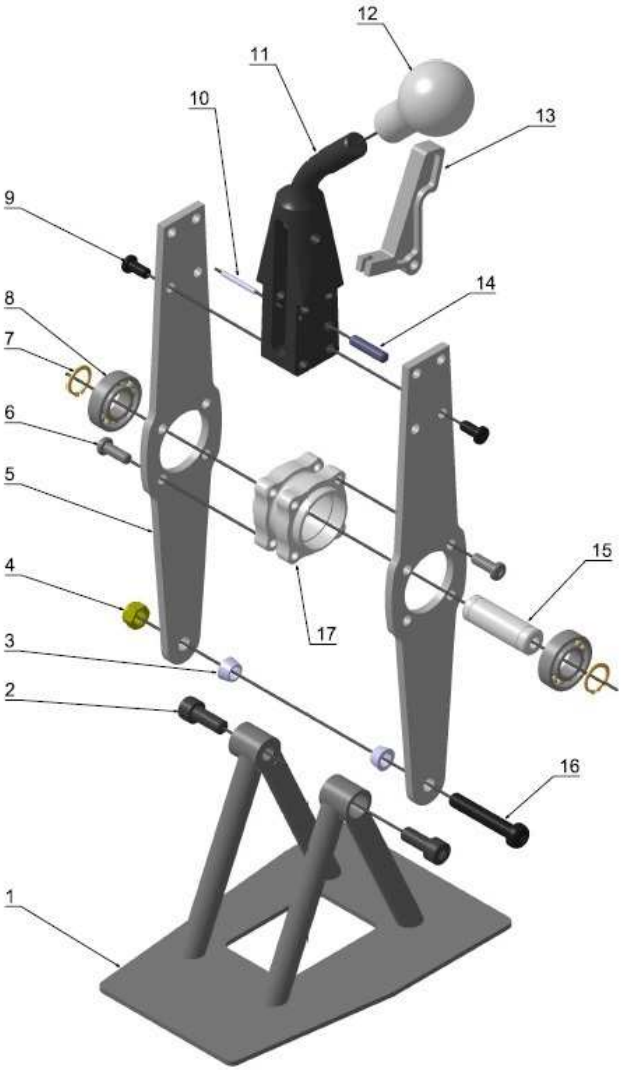
25	ø104x2.5 O'ring	3		
26	ø70x1.5 O'ring	1		
27	Pin	2		
28	Overload clutch piston	1		
29	ø94x2.5 O'ring	1		
30	AXK 4565 bearing	2		
31	Intermediate thrust bushing	1		
32	Belleville washer	4		
33	Stopping washer	1		
34	Limiter nut	1		
35	ø36x2 O'ring	1		
36	Piston adjusting shim	1		
37	Adjusting shim	1		
38	Thrust bearing hub	1		
39	AS4565 washer	1		
40	SB72 ring	1		
41	61910 bearing	1		
42	Cap	1		

Handbrake



Item	Description	Qty	Torque	Glue
	Complete handbreak	**1**		
1	Handbreak support	1		
2	M8x20 CHc bolt	2	3,5daN.m	
3	Rocker	1		
4	Handbreak axle	1		
5	6002 2RS bearing	4		
6	ø15 circlip	2		
7	Handbreak lever bolt	1		
8	ø32 circlip	2		
9	M6x10 Hc bolt	1		
10	Anti rotation plug	1		
11	Balance bar axle	1		
12	Lever support	1		
13	Balance bar	1		
14	HF5C ball joint	2		
15	Ball joint spacer	2		
16	M8 Simmonds nut	2		
17	Spring washer	1		
18	Handbreak spring	1		
19	Spring bushing	1		
20	Master cylinder	1		
21	Dash04 fitting	2		577
22	Dash04 fitting	2		577
23	Master cylinder bolt	2		
24	Master cylinder support	2		
25	M6 Simmonds nut	3		
26	Master cylinder	1		
27	Handbreak bushing	1		
28	Pressure stopping spacer	1		
29	M10 Simmonds nut	2		

Gear Lever



Item	Description	Qty	Torque
	Complete gear lever	**1**	
1	Gear lever support	1	
2	M8x20 CHc bolt	2	3,5daN.m
3	M8 ball joint spacer	2	
4	M8 nut	1	
5	Gear lever side	2	
6	M6x16 BHc bolt	8	
7	ø15 circlip	2	
8	6002 2RS bearing	2	
9	M6x12 BHc bolt	8	
10	ø3x24 dowel pin	1	
11	Gear knob support	1	
12	Gear knob	1	
13	Reverse gear unlocked lever	1	
14	Reverse gear unlocked lever axle	1	
15	Gear lever axle	1	
16	M8x45 BHc bolt	1	

11. BRAKES

11.1. PRE-BEDDING AT ALCON

Most discs and pads supplied by Alcon are pre-bedded. The purpose of pre-bedding the disc is to deposit an even transfer layer of friction material on to the surface of the disc. The secondary reason for prebedding the disc is to thermally condition the disc. The objective of pre-bedding the pad is to take the pad through a heat cycle during which the resins contained within the pad are cured, additionally, any high spots on the surface of the pad are removed.

After the discs have been pre-bedded and allowed to cool, the disc and pads can be bolted on to the car and should be ready for competition use providing that the discs and pads are "run-in" correctly.

11.2. USE OF PRE_BEDDED DISCS IN COMPETITION

Care needs to be taken during "running-in" to obtain the best performance and life from pre-bedded discs and pads. The running-in of discs and pads on the car immediately prior to competition use ensures that the face of the disc and pad are mated, removing any high spots. Lightweight discs are particularly sensitive to potential problems during use, failure to correctly run-in the discs and pads can result in problems including:

- Long pedal
- Poor feel and modulation
- Vibration
- Premature wear
- Disc cracking

All discs can suffer from premature cracking, this is normally caused by thermal shock, occurring when the disc is either cooled or heated too quickly. Additionally, an excessive rate of disc temperature increase can result in failure of the heat to be absorbed into both braking faces and the vanes evenly. Any significant temperature variation between the opposing flanges, including the mounting flange, can cause and promote disc coning and stresses within the disc cheeks, normally leading the problems listed above.

Heavier-weight discs are more stable and less prone to these problems, due to the increased structural rigidity gained from 48 and 72 vane design and generally increased flange thickness. It is still advisable to run-in the discs carefully as per instructions to follow.

To prevent these problems, an appropriate and proven "running-in" procedure needs to be followed, during rallies, races and tests. We suggest that the following procedures are employed:

11.3. "RUNNING – IN" INSTRUCTIONS

- 5 brake applies from slow speed and light pedal pressure to complete system check.
- 15 brake applies from 80 to 40 kph, light to moderate pedal pressure. (2.5 - 3.0 seconds, line pressure 20 bar)
- 15 brake applies from 120 to 60kph, light to moderate pedal pressure. (4.0 seconds, line pressure 20 bar)

11.4. WEAR ALLOWANCE AND MAINTENANCE

11.4.1. BRAKE DISCS

Wear allowance on brake discs should be considered as 1mm per face which sums up to 2 mm in total.

Note: As a cautionary note, it is not just the thickness of the disc that should be used to consider its suitability for continued use. A brake disc which has been overheated can become distorted and/or display other signs such as cracking, both of which could give cause to replace the disc before its minimum thickness, indicated above, has been reached.

11.4.2. BRAKE PADS

PNR4441X702.4 brake pads should be replaced when they have 2mm friction material remaining. As a side note, thickness of the pad is 7mm as 5mm backplate and 2mm friction material.